SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Plant Essential Oils

Educational subject description sheet

Basic information

Field of study
Course Offer for exchange students - second cycle studies, including uniform master studies (MA programmes)

Speciality
-

Organizational unit
Course Offer for exchange students

Study level
second cycle studies, including uniform master studies (MA programmes)

Study form
full-time studies

Education profile
General academic

Didactic cycle
2024/25

Subject code
PWMPWM2S_D.B100000P.06344.24

Lecture languages
english

Mandatory
Elective subjects

Block
Basic subjects

Disciplines

Coordinator	Olga Kosakowska
Teacher	Olga Kosakowska

Period	**Examination**	**Number of ECTS points**
Winter semester	Pass with grade **Activities and hours** Lecture: 15 Auditorium exercises: 7 Laboratory exercises: 8	3

Goals

Code	Goal
C1	The purpose of the subject is to provide students a comprehensive characteristic of plant essential oils, in the aspect of their biochemistry and applications

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	characteristics of essential oils, their chemical variability, biological activity and economic importance		Presentation, Test (written or computer based)
W2	advanced methods of essential oils analysis		Test (written or computer based), Assessment of work in the laboratory
Skills – Student can:			
U1	to identify and characterize selected essential oils, their chemical composition and industrial applications		Presentation, Test (written or computer based), Assessment of work in the laboratory
U2	to present factors affecting essential oils accumulation in plant raw material		Test (written or computer based)
Social competences – Student is ready to:			
K1	to work creatively in the group		Assessment of work in the laboratory
K2	the need to act in accordance with ethical principles		Assessment of work in the laboratory

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	The historical overview of the essential oils application. Worldwide production and usage of essential oils in the medicine, agriculture (in organic farming), food and cosmetic industry.	W1	Lecture
2.	Physiological functions of essential oils in plants. Types of secretory structures.	W1	Lecture, Auditorium exercises, Laboratory exercises
3.	Aromatic plants and their raw materials rich in essential oils. Internal and external factors affecting essental oils accumulation.	W1, W2, U1, U2, K1, K2	Lecture, Auditorium exercises, Laboratory exercises
4.	Terpenes biosynthesis. Chemical composition of essential oils and chemotypes phenomenon.	W1, W2, U2	Lecture
5.	Basics of aromatheraphy.	U1, K1, K2	Lecture, Laboratory exercises

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture

Activities	Methods of conducting classes
Auditorium exercises	Presentation
Laboratory exercises	Laboratory (experiment), learning by experiment

Activities	Examination method	Percentage
Lecture	Test (written or computer based)	65%
Auditorium exercises	Presentation	20%
Laboratory exercises	Assessment of work in the laboratory	15%

Activities	Credit conditions
Lecture	Grade over 51%
Auditorium exercises	Presence during classes, presentation
Laboratory exercises	Presence during classes, lab work

Literature

Obligatory

1. Başer, K.H.C., Bouchbauer, G., 2009. Handbook of Essential Oils: Science, Technology and Applications. Chemical Rubber Company Press, London.
2. Wichtl, M. (ed.) 1994. Herbal drugs and phytopharmaceuticals: A Handbook for Practice on a Scientific Basis. Medpharm, Stuttgart.
3. Peter, K.V. (ed.) 2004. Handbook of Herbs and Spices. CRC Press, Boca Raton.

Optional

1. Rohloff, J., 2004. Essential oil drugs – terpene composition of aromatic herbs. In: Production Practices and Quality Assessment of Food Crops, Dris R., Jain S.M. eds., vol 3: Quality Handling and Evaluation, Kluwer Academic Publishers, Netherlands, 73–128
2. Figueiredo, A.C., Barroso, J.G., José, G., Pedro, L.G., Scheffer, J.J.C., 2008. Factors affecting secondary metabolite production in plants: volatile components and essential oils. Flavour. Frag J. 23, 213–226.
3. Baranauskiene, R., Venskutonis, P., Dambrauskiene, E., Viškelis, P., 2013. Harvesting time influences the yield and oil composition of Origanum vulgare L. ssp. vulgare and ssp. hirtum. Ind. Crop. Prod. 49, 43–51.
4. Thompson, J.D.; Chalchat, J.C.; Michet, A.; Linhart, Y.B.; Ehlers, B. Qualitative and quantitative variation on monoterpene co-occurrence and composition in the essential oil of Thymus vulgaris chemotypes. J. Chem. Ecol. 2003, 29, 859-880.
5. Kosakowska O., Węglarz Z., Pióro-Jabrucka E., Przybył J., Kraśniewska K., Gniewosz M., Bączek K. 2021. Antioxidant and antibacterial activity of essential oils and hydroethanolic extracts of Greek oregano (O. vulgare L. subsp. hirtum (Link) Ietswaart) and common oregano (O. vulgare L. subsp. vulgare). Molecules, 26, 988.

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Auditorium exercises	7
Laboratory exercises	8
Preparation of a multimedia presentation	15

Conducting literature research	15
Preparation for the exam	15
Student workload	**Hours** 75
Number of ECTS points	**ECTS** 3

* hour means 45 minutes